

U.S. Patent Application Serial No. 10/574,274
Amendment filed April 16, 2009
Reply to OA dated December 17, 2008

AMENDMENTS TO THE CLAIMS:

Please add new claims 5-8, as follows. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Original): A lithium tantalate substrate having volume resistivity which has been controlled within the range of from more than 10^8 to less than 10^{10} Ωcm .

Claim 2 (Original): The lithium tantalate substrate according to claim 1, which has a heat history of being subjected to heat treatment at a temperature kept to from 350 to 600°C, in the state of being buried in a mixed powder of Al and Al_2O_3 .

Claim 3 (Original): A process for manufacturing a lithium tantalate substrate by using a lithium tantalate crystal grown by the Czochralski method, wherein;

a lithium tantalate crystal worked in the state of a substrate is buried in a mixed powder of Al and Al_2O_3 , followed by heat treatment carried out at a temperature kept to from 350 to 600°C, to manufacture a lithium tantalate substrate having volume resistivity which has been controlled within the range of from more than 10^8 to less than 10^{10} Ωcm .

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Claim 4 (Original): The process for manufacturing a lithium tantalate substrate according to claim 3, wherein said heat treatment is carried out in a reduced-pressure atmosphere of an inert gas.

Claim 5 (New): A process for manufacturing a lithium tantalate substrate by using a lithium tantalate crystal grown by the Czochralski method, wherein;

a lithium tantalate crystal worked in the state of a substrate is buried in a mixed powder of 50% by weight of Al and 50% by weight of Al_2O_3 , followed by heat treatment carried out at a temperature kept to from 350 to 600°C for 20 hours in an atmosphere of nitrogen gas and under reduced pressure, to manufacture a lithium tantalate substrate having volume resistivity which has been controlled within the range of from more than 10^8 to less than 10^{10} Ωcm .

Claim 6 (New): A process for manufacturing a lithium tantalate substrate by using a lithium tantalate crystal grown by the Czochralski method, wherein;

a lithium tantalate crystal worked in the state of a substrate is buried in a mixed powder of 10% by weight of Al and 90% by weight of Al_2O_3 , followed by heat treatment carried out at a temperature kept to from 350 to 600°C for 40 hours in an atmosphere of nitrogen gas and under reduced pressure, to manufacture a lithium tantalate substrate having volume resistivity which has been controlled within the range of from more than 10^8 to less than 10^{10} Ωcm .

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Claim 7 (New): A process for manufacturing a lithium tantalate substrate by using a lithium tantalate crystal grown by the Czochralski method, wherein;

a lithium tantalate crystal worked in the state of a substrate is buried in a mixed powder of 75% by weight of Al and 25% by weight of Al_2O_3 , followed by heat treatment carried out at a temperature of 550°C for 40 hours in an atmosphere of nitrogen gas and under atmospheric pressure, to manufacture a lithium tantalate substrate having volume resistivity which has been controlled within the range of from more than 10^8 to less than 10^{10} Ωcm .

Claim 8 (New): A process for manufacturing a lithium tantalate substrate by using a lithium tantalate crystal grown by the Czochralski method, wherein;

a lithium tantalate crystal worked in the state of a substrate is buried in a mixed powder of 50% by weight of Al and 50% by weight of Al_2O_3 , followed by heat treatment carried out at a temperature of 550°C for 10 hours in an atmosphere of vacuum, to manufacture a lithium tantalate substrate having volume resistivity which has been controlled within the range of from more than 10^8 to less than 10^{10} Ωcm .